Barriers to Medicaid Enrollment: Who Is at Risk?

Jennifer Stuber, PhD, and Elizabeth Bradley, PhD

Objectives. We identified factors associated with levels of knowledge about Medicaid eligibility rules and perceived Medicaid enrollment barriers.

Methods. Community health center patients who were parents of children potentially eligible for Medicaid (n=901) were interviewed in person during their clinic visit between April and December 1999.

Results. Individuals reporting physical health problems were more likely to be misinformed as were non-Hispanic Black individuals, compared with non-Hispanic White individuals. In states where more policies had been enacted to simplify Medicaid enrollment procedures, individuals were less likely to be misinformed. Individuals reporting mental health problems, those with less education, and women were more likely to perceive Medicaid enrollment barriers. Prior experience in Medicaid was associated with both a reduced risk of perceiving Medicaid enrollment barriers and being misinformed.

Conclusions. Findings highlight target groups for whom additional outreach and additional simplification policies may be most needed. (*Am J Public Health.* 2005; 95:292–298. doi: 10.2105/AJPH.2002.006254)

Medicaid is the primary program by which poor children in the United States obtain health insurance. In 1997, the Balanced Budget Act created the State Children's Health Insurance Program, which allows states to subsidize private insurance coverage or extend Medicaid coverage to children in families with increasingly higher income levels. Without health insurance, many children lack needed access to services, which results in lower rates of immunizations[1]; higher emergency room use[2]; increased incidence of preventable diseases[3]; and more common speech, hearing, and behavioral problems.[4–6] Despite the importance of insurance to children's access to health care and health, approximately 20% of children potentially eligible for public programs are not enrolled.[7,8] Understanding the factors associated with this phenomenon is paramount to improving financial access to health care for this population of children. Because of the importance of adequate preventive and acute care services in early life, identifying and addressing barriers to Medicaid enrollment is a central concern for health care policymakers.

Parents play a central role in children's receipt of health insurance. Thus, it is important to understand their knowledge of and attitudes about the enrollment process.

Prior research has shown that insufficient knowledge about Medicaid and the State Children's Health Insurance Program and perceived enrollment barriers (e.g., difficulties filling out the application, lack of access to transportation) can hinder participation.[9–11] However, little is known about the characteristics of parents who lack needed information and who perceive greater difficulties with the enrollment process. Only 1 published study has documented individuals who lack needed information. This study of 143 parents in 2 clinical settings found that welfare beneficiaries who had children with chronic health care conditions showed limited knowledge of public assistance programs.[12] The study focused on a limited geographic region and did not assess factors that might be associated with perceived enrollment barriers.

We were interested in assessing levels of knowledge and perceived enrollment barriers in the low-income population, whose members are often Medicaid eligible. A low-income child who is not eligible for Medicaid at 1 moment is likely to be eligible at some point in the near future because of common fluctuations in income and frequent changes in eligibility rules.[13] We used a sample of community health center patients to examine several individual-level factors (e.g., education, reported health problems) as well as state efforts to simplify the Medicaid enrollment process and their association with individuals' being misinformed about Medicaid program rules and perceiving greater Medicaid enrollment barriers. Assessing misinformation and enrollment barriers in a sample of low-income families is important to identifying parents who may benefit from additional outreach and simplification policies to promote children's appropriate enrollment in the Medicaid program.

METHODS

Study Design and Sample

This was a cross-sectional study based on patient interviews conducted between April and December 1999 at community health centers in 10 states and the District of Columbia. The states included in the study along with the percentage of the sample from each state were California (9%), Colorado (9%), Idaho (10%), Massachusetts (9%), Michigan (8%), Missouri (8%), Pennsylvania (8%), South Carolina (8%), Texas (10%), West Virginia (8%), and Washington, DC (13%). They were selected to ensure geographic and ideological variation. Generally, we tried to identify 2 states in each region of the country that were roughly equivalent in population size but showed significant differences in terms of markers of political ideology and culture.[14,15] Leadership at the National Association of Community Health Centers identified several health centers within each state that would reflect the diversity of the state including health centers in urban and rural areas and health centers of varied size. From this list, we selected at random 2 health centers in each state, one in an urban setting and the other in a rural setting.

Patients were selected according to when they signed in to see a provider at the health center. The first patient to sign in at the center was asked whether he or she would be willing to participate in the study. After the interviewer completed each interview, the next person to sign in was asked if he or she

would be willing to participate. All interviews were conducted while the patient waited to see a clinician or at the conclusion of the medical visit. Approximately 50 patients over the course of 5 days were interviewed at each health center. A total of 1686 people were approached to participate in the study; 281 refused or were unable to complete the entire interview, resulting in a final sample of 1405 completed surveys, yielding a response rate of 83.3%. The vast majority of those who did not complete the survey were unable to do so because of time constraints. For the analysis, we eliminated respondents whose income was above 300% of the federal poverty level (n=151). We also eliminated from this analysis those who were not the parent or primary caretaker of a child younger than 18 years in their household (n=353), because we wanted to focus on views of parents as they are relevant to children's insurance. Thus, the final analysis sample comprised 901 respondents.

Data Collection

Surveys were administered in person by research staff; interviews lasted between 20 and 30 minutes. Participants were offered $10 compensation and were given the option to be interviewed in Spanish or English. Sixteen percent of the surveys were administered in Spanish. The survey contained a broad range of questions about the respondents' demographic characteristics, history of participation in cash assistance and Medicaid, and health status. Questions about enrollment barriers and knowledge about program rules were adapted from previous surveys written on this subject.[11,16] The survey was pretested over a 1-week period at a health center in New Haven, Conn. Revisions to improve the clarity and feasibility of the survey were made after the pretesting, although formal testing of the reliability and validity of the survey measures was not done.

Dependent Variables

To assess each respondent's level of knowledge about Medicaid program rules, we asked respondents 4 true/false questions, which were selected because of their likely importance in parents' decisions to enroll their children in Medicaid. The questions were (1) Do you have to be on welfare to get Medicaid? (correct answer=no); (2) Do the welfare work requirements apply to people on Medicaid? (correct answer=no); (3) Do the welfare time limits apply to people on Medicaid? (correct answer=no); and (4) Can you apply for Medicaid at places other than a welfare office? (correct answer=yes). Incorrect responses to each question were summed to create a variable coded 0 through 4, where 4 indicated that the respondent answered all questions incorrectly. Respondents with at least 3 questions incorrect were considered to have less knowledge and were coded 1; all others were coded 0. To assess perceived enrollment barriers, respondents were read 5 statements using a 5-point Likert scale ranging from strongly agree to strongly disagree: (1) The Medicaid application is long and complicated. (2) It is hard to get the documentation needed to apply. (3) The hours when you can apply for Medicaid are inconvenient. (4) It is hard to find transportation to apply for Medicaid. and (5) It is hard to find translators to help apply for Medicaid. Respondents who agreed or strongly agreed with at least 3 of the statements were considered to face substantial enrollment barriers and were coded 1; all others were coded 0.

Independent Variables

Respondents' education was measured with dummy variables indicating the level of education received (eighth grade or less, some high school, high school diploma, more than a high school education). Two variables were created to measure respondents' health problems by asking respondents if during the past 4 weeks they had problems with their work or other daily activities first because of their physical health and second because of their mental health. For each variable, those who answered yes were coded 1 and those who answered no were coded 0.

Use of public assistance programs was measured by 2 questions. First, respondents were asked whether they had participated in Medicaid in the past 2 years. Second, they were asked whether they had participated in welfare in the past 2 years. Responses of yes to each were coded 1; responses of no were coded 0. In addition, we asked respondents about the health insurance status of each child in the household and then created a variable to assess if any child in the household currently lacked health insurance. Responses of yes were coded 1; responses of no were coded 0.

Gender, age, race/ethnicity (non-Hispanic Black, Hispanic/Latino, non-Hispanic White, or Other), monthly income, the number of children in the household, the number of parents in the household (0 for 2 parents, 1 for 1 parent), and the state where the respondent lived also were ascertained during the interview.

A variable to measure the extent to which each state in the study had simplified Medicaid enrollment procedures was created also. Four simplification policies were assessed: the elimination of face-to-face interviews as part of the application process; the dropping of the asset test, which allows determinations of Medicaid eligibility to be made based on income regardless of other resources; adopting presumptive eligibility, which allows children whose family income appears to be below the state's Medicaid income eligibility guidelines to enroll temporarily in Medicaid while families complete the formal application process; and allowing 12 months, rather than 6 months, of continuous eligibility for children on Medicaid. The Medicaid enrollment simplification variable ranged from 0 to 4 and was the sum of the number of these simplification policies enacted in the state. The mean of this variable was 1.82 (SD=0.84). One state (Texas) had adopted none of the simplification policies; 2 states (Colorado, West Virginia) had adopted 1 policy; 5 states (Idaho, Pennsylvania, Missouri, Michigan, California) and Washington DC had adopted 2 policies; 2 states (South Carolina, Massachusetts) had adopted 3 policies; and no state had adopted all 4 simplification policies.

Data Analysis

We use standard frequency analyses to describe the study population and the prevalence of the dependent variables. Unadjusted associations between each of the dependent variables and the independent variables were assessed with relative risk (RR) ratios because the outcomes variables were sufficiently prevalent that the odds ratio (OR) would not be a reasonable approximation of

the relative risk.[17] We used χ^2 statistics to test the significance of these unadjusted associations and estimated 95% confidence intervals (CIs). We estimated both ordered relative risk regressions (using 4- and 5-level ordered outcomes, respectively) and relative risk regression by means of the dichotomized outcomes. Because the results were comparable between the 2 approaches, we show only the latter results for simplicity. In the adjusted analyses, relative risks and their 95% confidence intervals were estimated and reported. We used dummy variables in the analysis to control for regional fixed effects. We used generalized estimating equations to adjust the standard errors of the parameter estimates because of the nonindependence of responses of individuals within states and within selected community health centers.[18,19] Although there is some discussion about whether the restricted maximum likelihood or generalized estimating equation method is preferred when analyzing clustered data, for data in which the number of clusters is less than 40, the generalized estimating equation approach is reasonable.[20]

RESULTS

Sample Characteristics

The sample was predominately female, and 68% of respondents were between the ages of 18 and 35 years (Table 1). Respondents were nearly evenly split between non-Hispanic White, non-Hispanic Black, and Hispanic individuals. Approximately one third (36%) of respondents had less than a high school education, 70% reported having an annual household income of less than $13 880 (the federal poverty level in 1999), 11% had 4 or more children, and 54% were single parents. Nearly one third (30%) reported that in the past 4 weeks they had a physical health problem that kept them from their work or other daily activities, and 28% reported that in the past 4 weeks they had a mental health problem that kept them from their work or other daily activities. Nearly three quarters of respondents (72%) reported participating in Medicaid in the last 2 years. Twenty eight percent stated that they had participated in welfare over this same period of time. Nearly a third (32%) of respondents reported that a child in their household did not have health insurance. Thirty nine percent of respondents reported that they did not have any health insurance, and 49% reported that someone in their household did not have any insurance. There was a substantial correlation between the respondent's having insurance and the child's having insurance ($\rho = 0.43$).

TABLE 1—Description of Study Population (n = 901): United States, 1999[a]

	No.	Percentage
Education		
< Ninth grade	107	12
Some high school	219	24
High school diploma	302	34
> High school	235	26
Missing data on education	38	4
Physical health problem in past 4 wk	273	30
Mental health problem in past 4 wk	249	28
Received Medicaid in last 2 y	496	72
Received welfare in last 2 y	230	28
Respondent insured	550	61
All children insured	612	68
All household members insured	460	51
Female	802	90
Race/ethnicity		
Non-Hispanic White	264	29
Non-Hispanic Black	276	31
Hispanic origin	301	34
Other	19	2
Missing data on race	41	5
1-parent household	475	54
Monthly household income, $		
0	249	31
0–1000	140	17
1001–3000	265	32
≥ 3001	163	20
Mean income	832	
Missing data on income	84	9
Age, y		
18–25	267	35
26–35	251	33
> 35	245	32
Mean age	32	
Missing data on age	138	15
Number of children		
1	367	41
2	270	30
3	161	18
≥ 4	103	11
Mean number of children	2.0	

[a]Data were collected in 10 states and the District of Columbia. Patients in 2 health centers within each state were selected to participate in the study.

Knowledge About Medicaid Program Rules

Many respondents lacked knowledge about Medicaid program rules. More than half of respondents answered incorrectly or were not sure about whether the welfare time limits and work requirements applied to people only on Medicaid (51% and 52%, respectively). A comparable number (54%) either answered incorrectly or were not sure about whether they could apply for Medicaid in places other than a welfare office. Approximately one quarter (24%) of respondents answered incorrectly or did not know if people have to be on welfare to obtain Medicaid. More than half of respondents (56%) answered 3 or more knowledge questions incorrectly.

Perceived Enrollment Barriers

The prevalence of perceived enrollment barriers was also high among respondents. Forty percent agreed or strongly agreed that the Medicaid application was long and complicated, and 41% of the respondents said it was hard to find translators to assist in completing the application process. About one third (34%) of respondents agreed or strongly agreed that it was difficult to obtain transportation to apply for Medicaid or to get the documents needed to apply (30%). Just more than one quarter of respondents (27%) agreed or strongly agreed that the hours when one could apply were inconvenient. Thirty percent agreed or strongly agreed with at least 3 of these items. The correlation between the indices was statistically significant ($P < .008$), but the magnitude of this correlation was quite limited ($\rho = 0.14$).

Factors Associated With a Lack of Knowledge About Medicaid Program Rules

Several factors were significantly associated with a lack of knowledge about Medicaid eli-

TABLE 2—Risk Factors for Having Less Knowledge (n = 788)

	Unadjusted RR	95% CI	Adjusted RR	95% CI
Education				
< Ninth grade	1.41	0.85, 2.34	1.62	0.90, 2.91
Some high school	1.14	0.78, 1.68	1.12	0.73, 1.72
High school diploma	1.20	0.84, 1.71	1.12	0.77, 1.63
> High school	Reference	Reference	Reference	Reference
Physical health problem in past 4 wk	1.65	1.21, 2.25	1.61	1.14, 2.28
Mental health problem in past 4 wk	1.34	0.98, 1.84	1.20	0.84, 1.71
Received Medicaid in last 2 y	0.55	0.40, 0.76)	0.50	0.35, 0.72
Received welfare in last 2 y	1.49	1.04, 2.13	1.46	0.97, 2.19
All children insured	0.71	0.52, 0.96	0.79	0.55, 1.12
Female	0.92	0.29, 2.92	0.99	0.29, 3.32
Race/ethnicity				
Non-Hispanic White	Reference	Reference	Reference	Reference
Non-Hispanic Black	1.25	0.88, 1.77	1.56	1.04, 2.36
Hispanic origin	1.07	0.76, 1.52	0.98	0.66, 1.46
Other	1.12	0.41, 3.10	1.53	0.53, 4.40
1-parent household	1.13	0.85, 1.50	0.97	0.67, 1.42
Monthly household income, $				
0	Reference	Reference	Reference	Reference
0–1000	0.97	0.64, 1.48	0.93	0.58, 1.48
1001–3000	0.70	0.50, 1.00	0.62	0.42, 0.92
≥ 3001	0.79	0.53, 1.19	0.74	0.45, 1.21
Age, y				
18–25	Reference	Reference	Reference	Reference
26–35	1.07	0.77, 1.5	1.16	0.80, 1.68
> 35	1.06	0.75, 1.49	0.90	0.61, 1.33
Number of children in household				
1	Reference	Reference	Reference	Reference
2	0.77	0.55, 1.09	0.80	0.55, 1.15
3	0.88	0.59, 1.32	0.92	0.59, 1.41
≥ 4	0.59	0.37, 0.94	0.52	0.31, 0.86
Simplification of enrollment procedures[a]	0.76	0.64, .90	0.77	0.63, 0.95
Region				
Northeast	Reference	Reference	Reference	Reference
South	1.96	1.28, 2.99	1.53	0.92, 2.54
Midwest	1.79	1.08, 2.97	1.70	0.98, 2.94
West	1.29	0.82, 2.02	0.99	0.59, 1.66

Note. RR = relative risk; CI = confidence interval.
[a]The Medicaid enrollment simplification variable ranged from 0 to 4 and was the sum of the number of 4 simplification policies enacted in each state

gibility rules in the multivariable analysis. Respondents who reported having a physical health problem in the past 4 weeks were more likely than those without a physical health problem (adjusted RR=1.61; 95% CI=1.14, 2.28) to be misinformed about Medicaid, as were non-Hispanic Black respondents (vs non-Hispanic White respondents) (adjusted RR=1.56; 95% CI=1.04, 2.36) (Table 2). Respondents who had received Medicaid in the last 2 years were less likely to be misinformed than those who had not (adjusted RR=0.50; 95% CI=0.35, 0.72). Respondents in states with higher levels of simplification were less likely to be misinformed than the others (adjusted RR=0.77, 95% CI=0.63, 0.95).

Factors Associated With Perceived Medicaid Enrollment Barriers

In the multivariable analysis, respondents who reported having a mental health problem in the last 4 weeks were more likely to perceive enrollment barriers than those who did not (adjusted RR=1.51; 95% CI=1.07, 2.14) (Table 3). Respondents with the least education (less than ninth grade) were more likely to perceive enrollment barriers (adjusted RR=2.18; 95% CI=1.27, 3.74) than those with more than a high school education. Women were more likely to perceive enrollment barriers (adjusted RR=1.74; 95% CI=1.02, 2.98). Respondents with prior experience in Medicaid in the last 2 years were less likely to perceive enrollment barriers (adjusted RR=0.65; 95% CI=0.45, 0.93). State simplification policies were not significantly associated with perceived enrollment barriers. However, respondents who lived in the South were more likely to perceive enrollment barriers than those who resided in the Northeast (adjusted RR=1.90; 95% CI=1.09, 3.30) as were respondents who lived in the West compared with the those who lived in the Northeast (adjusted RR=1.98, 95% CI=1.13, 3.45).

DISCUSSION

The findings indicated that there were substantial gaps in knowledge about Medicaid program rules and that many respondents perceived enrollment barriers. The modest correlation between these variables suggested that these were independent dimensions and not just related measures.

The study also revealed important patterns in those facing increased Medicaid enrollment barriers and misinformation about Medicaid program rules. The data indicated that those with greater health problems, those with less education, and non-Hispanic Black parents had more limited information about Medicaid rules or perceived greater enrollment barriers. Prior experience with Medicaid may mitigate these issues to some extent, in that those with prior experience

TABLE 3—Risk Factors for Perceived Enrollment Barriers (n = 817)

	Unadjusted RR	95% CI	Adjusted RR	95% CI
Education				
< Ninth grade	2.15	1.35, 3.42	2.18	1.27, 3.74
Some high school	1.43	0.97, 2.10	1.44	0.94, 2.21
High school diploma	0.97	0.67, 1.41	0.90	0.61, 1.33
> High school	Reference	Reference	Reference	Reference
Physical health problem in past 4 wk	1.25	0.92, 1.69	1.07	0.76, 1.51
Mental health problem in past 4 wk	1.60	1.17, 2.17	1.51	1.07, 2.14
Received Medicaid in last 2 y	0.64	0.46, 0.88	0.65	0.45, 0.93
Received welfare in last 2 y	0.93	0.63, 1.36	0.99	0.65, 1.51
All children insured	0.69	0.50, 0.90	0.89	0.63, 1.25
Female	1.25	0.76, 2.05	1.74	1.02, 2.98
Race/ethnicity				
Non-Hispanic White	Reference	Reference	Reference	Reference
Non-Hispanic Black	1.16	0.81, 1.68	1.45	0.95, 2.21
Hispanic origin	1.41	0.99, 2.00	1.07	0.72, 1.59
Other	4.80	1.83, 12.62	6.12	2.23, 16.79
1-parent household	0.79	0.56, 1.06	0.85	0.59, 1.24
Monthly household income, $				
0	Reference	Reference	Reference	Reference
0–1000	0.89	0.57, 1.37	0.96	0.59, 1.55
1001–3000	1.05	1.20, 2.00	0.91	0.62, 1.34
≥ 3001	1.05	0.70, 1.57	0.94	0.58, 1.51
Age, y				
18–25	Reference	Reference	Reference	Reference
26–35	0.90	0.63, 1.28	0.84	0.58, 1.23
> 35	1.43	1.20, 2.00	1.18	0.81, 1.73
Number of children in household				
1	Reference	Reference	Reference	Reference
2	0.87	0.62, 1.22	0.86	0.60, 1.24
3	0.83	0.55, 1.25	0.88	0.57, 1.37
≥ 4	1.05	0.66, 1.68	0.90	0.55, 1.50
Simplification of enrollment procedures[a]	0.95	0.80, 1.12	1.04	0.85, 1.27
Region				
Northeast	Reference	Reference	Reference	Reference
South	1.93	1.21, 3.08	1.90	1.09, 3.30
Midwest	1.36	0.78, 2.36	1.47	0.81, 2.66
West	2.00	1.22, 3.28	1.98	1.13, 3.45

Note. RR = relative risk; CI = confidence interval.
[a]The Medicaid enrollment simplification variable ranged from 0 to 4 and was the sum of the number of four simplification policies enacted in each state

reported fewer barriers to enrollment and were better informed than those without such prior experience. States with simplified Medicaid enrollment procedures also had a reduced risk of respondents' being misinformed. However, even after adjusting for state policies and regional fixed effects, health and demographic factors remained significantly associated with our outcomes.

Since this study was completed, almost all states have cut their Medicaid budgets in response to the current fiscal crisis.[21] In several of the states included in this study, eligibility limits have been reduced for working parents and children, and administrative hurdles have been reintroduced into the enrollment process. For example, states have increased paperwork requirements on first-time applicants and have shortened eligibility periods from 12 to 6 months; thus, families who do not complete or submit forms will lose coverage.[22] Our findings suggest that these actions may increase levels of misinformation about the Medicaid program. They may make it more difficult to stay enrolled in public insurance programs and thus reduce the rolls, as was their intent. Recent studies have shown substantial administrative costs associated with Medicaid enrollment, which compete for the limited pool of health care dollars.[13,23] This observation coupled with our other finding that a disproportionate burden of these administrative hurdles fell on parents with health problems and those with less education suggests that states may want to reconsider reintroducing barriers into the enrollment system as a method to control Medicaid spending. The finding that respondents with health problems were more likely to perceive enrollment barriers and to lack knowledge about Medicaid program rules was particularly perverse and may lead to delays in receiving care and to higher levels of morbidity among parents and their children.

Researchers have been concerned about knowledge disparities regarding other entitlement programs such as Medicare because knowledge deficiencies hamper the implementation of programs. Studies of Medicare beneficiaries have shown that several demographic factors are associated with knowledge of that program, including higher education,[24–28] higher income,[24–28] being male,[26] being White,[27] and younger age.[25,26,28] The only demographic characteristics we found to be associated with knowledge was race/ethnicity, with non-Hispanic Blacks being less likely than Whites to have knowledge about Medicaid program rules. Disparities in knowledge about key features of Medicaid programs is an area that merits additional research as this is one of only 2 studies identifying groups who may be at greater risk for limited knowledge.

The results of this study should be interpreted in light of its limitations. The study's

sample was constituted of community health center patients who may access health care more regularly than do other low-income groups, and thus respondents in this study may not be generalizable to other low-income groups. To the extent that the use of health care services was associated with a greater ability to overcome enrollment barriers, this sample may underestimate the prevalence of enrollment barriers in the general low-income population. On the other hand, respondents may be using community health centers precisely because they are unable or unwilling to negotiate enrollment barriers. The net effect of these 2 possible biases is unclear. In addition, community health center patients may be better informed about Medicaid program rules than low-income people in the general population because the 1990 federal Medicaid law requires states to offer enrollment assistance at health centers. Because the measure of Medicaid simplification policies is strongly correlated with states, we were unable to reliably estimate the model retaining both variables. However, we were able to control for regional fixed effects.

Our findings identify groups that might be targeted with outreach and marketing interventions, especially in tight budgetary times. Because respondents with prior recent experience in the Medicaid program were at lower risk for misinformation and for perceiving enrollment barriers, it is possible that they may have learned from their previous experiences in the Medicaid program. States may want to target outreach and marketing strategies to reach nontraditional coverage populations such as parents whose children have no prior experience in the Medicaid program. Our findings suggest other groups that should be targeted for marketing and outreach interventions including (1) parents with less education; (2) parents who are in poor physical or poor mental health; and (3) non-Hispanic Blacks. Many states have devised creative strategies to find and enroll eligible children; some of these strategies are targeted at specific vulnerable groups. For example, in California and Michigan, trusted community groups have been engaged to inform Blacks about the Medicaid program and to provide enrollment assistance, because in some Black communities, residents harbor suspicion of health care institutions.[29]

Finally, our findings suggest that state policies to simplify Medicaid enrollment procedures were associated with reduced misinformation about the Medicaid program, although somewhat surprisingly, these policies were not associated with the respondents' perceptions of enrollment barriers. Even after we controlled for the degree of Medicaid simplification policies in each state, significant differences by region in terms of perceptions of enrollment barriers remained. We were unable to assess whether this variation by region was attributable to other unmeasured state or local policies and practices, including those at the individual community health centers. Several best practices for Medicaid enrollment and retention strategies have been described in the literature.[30,31] Our findings suggest that states with burdensome enrollment processes and less outreach may want to consider implementing some of these innovative strategies. ■

About the Authors

Jennifer Stuber is with the Division of Health and Science Policy, New York Academy of Medicine, New York, NY. Elizabeth Bradley is with the Division of Health Policy and Administration, Yale University, New Haven, Conn.

Requests for reprints should be sent to Jennifer Stuber, PhD, Research Associate, The New York Academy of Medicine, 1216 Fifth Ave, New York, NY 10029 (e-mail: jstuber@nyam.org; elizabeth.bradley@yale.edu).

This article was accepted July 13, 2003.

Contributors

J. Stuber led the design and implementation of the study and the writing of the article. E. Bradley helped to conceptualize the ideas, plan the analysis, and write the article.

Acknowledgments

This research was partially supported by a grant from The Robert Wood Johnson Foundation.

The authors thank Kathleen Maloy, Sara Rosenbaum, and Dan Hawkins for facilitating this research.

Human Participant Protection

The institutional review board at the Yale University School of Medicine approved all research procedures.

References

1. Rodewald LE, Shiuh T, Zell E, Dietz V, Szilagyi PG. Health insurance and under-immunization: lessons from the 1991 Health Interview Survey. *Pediatr Res.* 1995;37:144A.

2. Pappas G, Hadden W., Kozak L, Fisher G. Potentially avoidable hospitalizations: inequalities in rates between US socioeconomic groups. *Am J Public Health.* 1997;87:811–816.

3. Szilagyi P, Holl J, Rodewald L, et al. Evaluations of children's health insurance: from New York State's Child Health Plus to SCHIP. *Pediatrics.* 2000;105:687–691.

4. Lous J. 1995. Otitis media and reading achievement: a review. *Int J Pediatr Otorhinolaryngol.* 1995;32(2):105–121.

5. Mody K, Schwartz R, Gravel J, Ruben R. Speech perception and verbal memory in children with and without histories of otitis media. *J Speech Lang Hear Res.* 1999;42:1069–1079.

6. Lozoff B, Klein N, Nelson E, McClish D, et al. Behavior of infants with iron-deficiency anemia. *Child Dev.* 2000;9(1):24–36.

7. Seldin T, Banthin J, Cohen J. Medicaid's problem children: eligible but not enrolled. *Health Aff (Millwood).* 1998;17(3):192–200.

8. Davidoff A, Garret B, Maku D, Schirmer M. Medicaid-eligible children who don't enroll: health status, access to care, and implications for Medicaid enrollment. *Inquiry.* 2000;37:203–218.

9. Cohen-Ross D, Cox L. 2000. *Making It Simple: Medicaid for Children and CHIP Income Eligibility Guidelines and Enrollment Procedures.* Washington, DC: The Center on Budget and Policy Priorities for the Kaiser Commission on Medicaid and the Uninsured; 2000.

10. Kenney G, Haley J. *Why Aren't More Uninsured Children Enrolled in Medicaid and SCHIP?* Washington, DC: The Urban Institute; 2001. Series B, No. B-35.

11. Perry M, Kannel SR, Buciaga V, Chang C. *Medicaid and Children: Overcoming Barriers to Medicaid Enrollment: Findings From a National Survey.* Washington, DC: Kaiser Commission on Medicaid and the Uninsured; 2000.

12. Smith L, Wise P, Wampler N. Knowledge of welfare reform program provisions among families with children with chronic conditions. *Am J Public Health.* 2002;92:228–230.

13. Ku L, Ross DC. *Staying Covered: The Importance of Retaining Health Insurance for Low-Income Families.* New York, NY: The Commonwealth Fund; 2002.

14. Erikson R, Wright G, McIver J. Statehouse Democracy: Public Opinion and Policy in the American States. New York, NY: Cambridge University Press; 1993.

15. Elazar D. *American Federalism: A View from the States.* 3rd ed. Boston, Mass: Addison-Wesley Publishing Co; 1984.

16. *National Survey of America's Families.* Washington, DC: The Urban Institute; 1997.

17. Zhang J, Yu K. What's the relative risk? A method of correcting the odds ratio in cohort studies of common outcomes. *JAMA.* 1998; 280:1690–1691.

18. Snijders T, Bosker R. *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modelling.* London, England: Sage Publications; 1999.

19. Diggle PJ, Liang KY, Zeger SL. *Analysis of Longitudinal Data.* New York, NY: Oxford University Press; 1994.

20. Bijleveld CC, van der Kamp LJ, Mooijaart A, van der Kllot WA, van der Leeden R, van der Burg E.

Longitudinal Data Analysis: Designs, Models, and Methods. London: Sage Publications; 1998.

21. Smith V, Gifford K, Ramesh R, Wachino V. *Medicaid Spending Growth: A 50-State Update for Fiscal Year 2003.* Washington, DC: Kaiser Commission on Medicaid and the Uninsured; 2003.

22. Cohen Ross D, Ku L. *Quarterly Status Reporting Could Jeopardize the Health Coverage of Hundreds of Thousands of Eligible Low-Income Californians.* Washington, DC: Center on Budget and Policy Priorities; 2002.

23. Fairbrother G, Dutton M, Bachrach D, Newell K, Boozang P, Cooper R. Costs of enrolling children in Medicaid and SCHIP. *Health Aff (Millwood).* 2004; 23(1):237–243.

24. Cafferata C. Knowledge of their health insurance coverage by the elderly. *Med Care.* 1984;22:835–847.

25. Hibbard J, Jewett J, Englemann S, Tusler M. Can Medicare beneficiaries make informed choices? *Health Aff (Millwood).* 1998;17(6):181–193.

26. Lambert Z. Elderly consumers' knowledge related to Medigap protection needs. *J Consumer Aff.* 1980;14: 434–451.

27. Marquis M. Consumers knowledge about their health insurance coverage. *Health Care Financing Rev.* 1983;5(1):65–80.

28. McCall N, Rice T, Sangl J. Consumer knowledge of Medicare and supplemental health insurance benefits. *Health Serv Res.* 1986;20:633–657.

29. Patterson J. *Conducting Children's Health Insurance Outreach in African American Communities.* Washington, DC: Center on Budget and Policy Priorities; 2000.

30. Steps States Can Take to Facilitate Medicaid Enrollment of Children. 1998. Washington, DC: Center on Budget and Policy Priorities. Available at: http://www.cbpp.rog/12-6-99health.htm. Accessed June 23, 2004.

31. National Governor's Association Center for Best Practices Issue Brief. 1998. How States Can Increase Enrollment in the State Children's Health Insurance Program. Available at: http://www.nga.org/cda/files/051198SCHIP.pdf. Accessed on June 23, 2004.